IN THE SPECIFICATION:

Please replace the following paragraphs with the rewritten paragraphs below.

[0003] In vitro membrane diffusion systems with automated sampling are widely available for flow-through diffusion cells. However, applicants are presently aware of only two commercial systems that provide both static diffusion cells and automated sampling. Hanson Research Corp. of Chatsworth, Calif., sells the Hanson MicroettePlus.TM. Transdermal Diffusion System, and Logan Instruments Corp. of Somerset, ~~VT~~NJ, sells the Logan System-902 and Logan System-912 Automated Transdermal Sampling Systems. Logan also plans to sell an upgraded system that includes a cell design similar to the 902-system and an XYZ robot for automatic sampling. Although, the diffusion systems available from Hanson Research and Logan Instruments exhibit differences in design, the systems available from both companies includes a large amount of small diameter tubing and pumps (peristaltic or syringe) that move fluids through multiple compartments within the systems.

[0005] As illustrated in FIG. 4, in the Hanson MicroettePlus™ Transdermal Diffusion System 80, the diffusion cell consists of a single chamber, but the input arm of the receptor chamber is connected by tubing to a syringe chamber (Microette unit) and the output arm to a central sample collection chamber. Samples from the receptor chambers are collected in the central sample collection chamber by positive displacement initiated by the syringe unit. Therefore, the MicroettePlus.TM. Transdermal Diffusion System also utilizes multiple chambers interconnected by tubing.

[0018] FIG. 10 provides a bottom view of schematic illustration of a bubble channel that can be formed between the first opening and the second opening in the receptor compartment of a diffusion cell according to the present invention.

[0038] In a particularly preferred embodiment, the diffusion cell of the present invention is not only designed with receptor compartment having a top surface that inclines upward toward the second opening, but the diffusion cell also includes a channel connecting the first and second outlets. The channel can simply be a depression formed in the top surface of the receptor compartment that extends between the first and second outlets. An illustration of such a channel is provided in FIG. ~~8~~10. Typically, the first outlet of the

receptor compartment will not be designed such that the bottom surface of the diffusion membrane is flush with the other portions of the top surface of the receptor compartment. Because of this, bubbles may be trapped at the step formed where the bottom surface of the diffusion membrane interfaces with the remainder of the top surface of the receptor compartment. Forming a channel between the first and second outlet reduces any step formed at this interface and thereby further facilitates the automatic migration of bubbles from the bottom surface of the diffusion membrane to the bubble trap formed by the second outlet.